unmodulated light. The optical modulator 104 receives the unmodulated light from the light source 103 and the FM modulated signal through the electrical transmission line 102, then modulates the unmodulated light with the FM modulated signal, and outputs an optical signal whose optical carrier component is suppressed. The optical modulator 104 has the Mach-Zehnder interferometer structure, for example, and is biased at the "valley" in its input-voltage vs. output-optical-power characteristic, where the output optical power is at the minimum, as shown in FIG. 3. The FM modulated signal is applied to the optical modulator 104 with respect to the voltage of an operating point 1001 which is set by the above-mentioned bias. The optical modulator 104 thus produces an optical-intensity-modulated signal (hereinafter, referred to as "optical signal") having the optical frequency spectrum in which an optical carrier component is suppressed as shown in FIG. 2B. The optical receiver 106 receives the optical signal through the optical transmission line 105, and square-law detects the signal to convert into an FM modulated signal having the frequency spectrum as shown in FIG. 2C, that is, an FM modulated signal whose carrier frequency is 2fc and whose frequency deviation is 2* ΔF. The optical receiver 106 then outputs the FM modulated signal to the FM demodulator 107. The FM demodulator 107 demodulates the FM modulated signal to reproduce the original frequency-division-multiplexed signal.

IN THE CLAIMS

Please amend claims 1-14 as follows.

1. (Amended) A transmission system for optically transmitting a frequency-division-multiplexed signal, which is obtained by frequency-division multiplexing a plurality of signals, said transmission system comprising:

a transmitting end comprising a multiplexer operable to frequency-division multiplex the plurality of signals to produce the frequency-division multiplexed signal, a FM modulator being operable to convert the frequency-division-multiplexed signal into a frequency-modulated signal through frequency modulation using the frequency-division-multiplexed signal as an original signal to output the frequency-modulated signal as a FM modulated signal, and an optical transmitter operable to convert the FM modulated signal into an optical-intensity-modulated signal whose

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optical carrier component is suppressed in an optical frequency spectrum through optical modulation using the FM modulated signal as an original signal to send the optical-intensity-modulated signal to a receiving end; and

said receiving end comprising an optical receiver operable to receive the optical-intensity-modulated signal from said optical transmitter, and convert the optical-intensity-modulated signal into an electrical signal corresponding to the FM modulated signal through photodetection based on a square-law detection characteristic to the output the electrical signal as a received FM modulated signal, and a FM demodulator operable to demodulate the received FM modulated signal to reproduce the frequency-division-multiplexed signal.

Amd.

2. (Amended) The transmission system according to claim 1, wherein said optical transmitter comprises:

a light source being operable to output an unmodulated light; and

an optical modulator being operable to modulate the unmodulated light with the FM modulated signal to produce the optical-intensity-modulated signal, said optical modulator having a Mach-Zehnder interferometer structure with a predetermined input-voltage versus output-optical-power characteristic, and being biased in the input-voltage versus output-optical-power characteristic such that an output optical power is at a minimum.

3. (Amended) The transmission system according to claim 2, further comprising a frequency-divider provided between said FM modulator and said optical transmitter, said frequency-divider being operable to convert the FM modulated signal outputted from said FM modulator into a frequency-divided FM modulated signal whose frequency is $1/2^n$ of a frequency of the FM modulated signal, the n being an integer of not less than 1,

wherein said optical modulator modulates the unmodulated light with the frequency-divided FM modulated signal to produce the optical-intensity-modulated signal.

4. (Amended) The transmission system according to claim 1, wherein said optical transmitter comprises:

a light source being operable to output an unmodulated light;

an optical branching circuit being operable to branch the unmodulated light fed from said light source into a first unmodulated light and a second unmodulated light;

an optical modulator being operable to modulate the first unmodulated light with the FM modulated signal to produce the optical-intensity-modulated signal, said optical modulator having a Mach-Zehnder interferometer structure with a predetermined input-voltage versus output-optical-power characteristic, and being biased in the input-voltage versus output-optical-power characteristic such that an output optical power is at a maximum; and

an optical combining circuit being operable to combine the optical-intensity-modulated signal produced by said optical modulator and the second unmodulated light to cancel an optical carrier component of the optical-intensity-modulated signal with the second unmodulated light and output the optical-intensity-modulated signal whose optical carrier component is suppressed.

5. (Amended) The transmission system according to claim 4, wherein said optical transmitter further comprises an optical delay circuit provided between said optical branching circuit and said optical combining circuit, said optical delay circuit being operable to adjust a propagation delay of at least one of the first unmodulated light, the second unmodulated light, and the optical-intensity-modulated signal produced by said optical modulator such that the second unmodulated light and the optical carrier component of the optical-intensity-modulated signal produced by said optical modulator are set in opposite phases to each other.

6. (Amended) The transmission system according to claim 4, further comprising a frequency-divider provided between said FM modulator and said optical transmitter, said frequency-divider being operable to convert the FM modulated signal outputted from said FM modulator into a frequency-divided FM modulated signal whose frequency is $1/2^n$ of a frequency of the FM modulated signal, n being an integer of not less than 1,

wherein said optical modulator modulates the first unmodulated light with the frequency-divided FM modulated signal to produce the optical-intensity-modulated signal.

7. (Amended) The transmission system according to claim 1, further comprising a frequency-divider provided between said FM modulator and said optical transmitter, said frequency-divider being operable to convert the FM modulated signal outputted from said FM modulator into a frequency-divided FM modulated signal whose frequency is $1/2^n$ of a frequency of the FM modulated signal, n being an integer of not less than 1,

wherein said optical transmitter comprises an optical modulator being operable to produce the optical-intensity-modulated signal through the optical modulation using the frequency-divided FM modulated signal as an original signal.

8. (Amended) A transmitter for use in a transmission system for optically transmitting a frequency-division-multiplexed signal, which is obtained by frequency-division-multiplexing a plurality of signals, said transmitter comprising:

a multiplexer being operable to frequency-division-multiplex the plurality of signals to produce the frequency-division-multiplexed signal;

a FM modulator being operable to convert the frequency-division-multiplexed signal into a frequency-modulated signal through frequency modulation using the frequency-division-multiplexed signal as an original signal to output the frequency-modulated signal as a FM modulated signal; and

an optical transmitter being operable to convert the FM modulated signal into an optical-intensity-modulated signal whose optical carrier component is suppressed in an optical frequency spectrum through optical modulation using the FM modulated signal as an original signal to send the optical-intensity-modulated signal to a receiving end.

9. (Amended) The transmitter according to claim 8, wherein said optical transmitter comprises:

a light source being operable to output an unmodulated light; and

an optical modulator being operable to modulate the unmodulated light with the FM modulated signal to produce the optical-intensity-modulated signal, said optical modulator having a Mach-Zehnder interferometer structure with a predetermined input-voltage versus output-optical-power characteristic, and being biased in the input-voltage versus output-optical-power characteristic such that an output optical power is at a minimum.

10. (Amended) The transmitter according to claim 9, further comprising a frequency-divider provided between said FM modulator and said optical transmitter, said frequency-divider being operable to convert the FM modulated signal outputted from said FM modulator into a frequency-divided FM modulated signal whose frequency is $1/2^n$ of a frequency of the FM modulated signal, n being an integer of not less than 1,

wherein said optical modulator modulates the unmodulated light with the frequency-divided FM modulated signal to produce the optical-intensity-modulated signal.

A6 cont.

11. (Amended) The transmitter according to claim 8, wherein said optical transmitter comprises:

a light source being operable to output an unmodulated light;

an optical branching circuit being operable to branch the unmodulated light fed from said light source into a first unmodulated light and a second unmodulated light;

an optical modulator being operable to modulate the first unmodulated light with the FM modulated signal to produce the optical-intensity-modulated signal, said optical modulator having a Mach-Zehnder interferometer structure with a predetermined input-voltage versus output-optical-power characteristic, and being biased in the input-voltage versus output-optical-power characteristic such that an output optical power is at a maximum; and

an optical combining circuit being operable to combine the optical-intensity-modulated signal produced by said optical modulator and the second unmodulated light to cancel an optical carrier component of the optical-intensity-modulated signal with the second unmodulated light, and output the optical-intensity-modulated signal whose optical carrier component is suppressed.

12. (Amended) The transmitter according to claim 11, wherein said optical transmitter further comprises an optical delay circuit provided between said optical branching circuit and said optical combining circuit, said optical delay circuit being operable to adjust a propagation delay of at least one of the first unmodulated light, the second unmodulated light, and the optical-intensity-modulated signal produced by said optical modulator such that the second unmodulated light and the optical carrier component of the optical-intensity-modulated signal produced by said optical modulator are set in opposite phases to each other.

13. (Amended) The transmitter according to claim 11, further comprising a frequency-divider provided between said FM modulator and said optical transmitter, said frequency-divider being operable to convert the FM modulated signal outputted from said FM modulator into a frequency-divided FM modulated signal whose frequency is $1/2^n$ of a frequency of the FM modulated signal, n being an integer of not less than 1,

wherein said optical modulator modulates the first unmodulated light with the frequency-divided FM modulated signal to produce the optical-intensity-modulated signal.

A6 cont.

14. (Amended) The transmitter according to claim 8, further comprising a frequency-divider provided between said FM modulator and said optical transmitter, said frequency-divider being operable to convert the FM modulated signal outputted from said FM modulator into a frequency-divided FM modulated signal whose frequency is $1/2^n$ of a frequency of the FM modulated signal, n being an integer of not less than 1,

wherein said optical transmitter includes an optical modulator being operable to produce the optical-intensity-modulated signal through the optical modulation using the frequency-divided FM modulated signal as an original signal.